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THE POISON-GLANDS OF A RATTLESNAKE DURING THE PERIOD OF HIBERNATION.

By L. L. DYCHE, University of Kansas, Lawrence.

IN 1905 and 1906 the writer spent about two months near Wa Keeney, Trego county, Kansas, collecting birds and mammals. He made his headquarters on Dr. A. B. Jones's ranch with Mr. Chas. Steinberger, who at that time lived on the ranch.

While riding over the high prairies about five miles south of Wa Keeney one afternoon late in October, 1906, the writer and Mr. Steinberger came upon two (presumably a pair) rattlesnakes. They were sunning themselves near the mouth of a prairie-dog hole. It was quite a surprise to see the snakes, as the weather only a few days before had been quite cold, with heavy frosts and some snow and ice. The weather, however, had moderated, and with the wind in the southwest and the sun shining it was quite warm on that particular afternoon.

I had always supposed, without thinking much about it in particular, that when snakes had once been driven to their winter quarters by cold weather they remained in their hibernating dens until the warm air of spring-time induced them to come forth. I learned, however, from ranchmen who lived in the neighborhood, that this particular species of snake, *Crotatus confluentus*, was sometimes seen basking in the sun near holes in prairie-dog towns as late as the middle of November and as early as the middle of March.

At the sight of one of the snakes, which was coiled about four feet from his den, my friend, Mr. Steinberger, grabbed a shotgun and jumped to the ground. The snake made a quick dash for its den and received a load of shot that blew it into the prairie-dog hole. This commotion disturbed the other snake that was coiled about six feet from the hole. It made a quick rush for the hole, almost crawling over Mr. Steinberger's feet. He got a quick backward movement on himself when he saw the snake at his feet, but managed, in the moment of excitement, to give the snake a load of shot, at a distance of a few feet, that blew it away from the edge of the hole.

This snake was three feet long and its body was almost severed about eight inches from its head. After looking down a hole that

seemed to have no bottom for the first snake, we placed snake No. 2 in the buggy and drove to the ranch.

Neither snake used its rattle or showed any signs of fight. Next morning, at the breakfast table, Doctor Jones and Mr. Steinberger expressed a desire to see and examine the poison-glands of the snake. After breakfast we went to the tool-house and machine-shop, where we spread the snake out on a board and began our dissections. The skin was carefully removed from the snake's head. The fangs, the muscles by which they were controlled, as well as the peculiar action and mechanism of the jaws, were examined. By removing some of the muscles the poison-glands were laid bare. Much to our surprise there was not a drop or even a trace of poison in them. They were empty and shrunken, at least as compared with the glands of other rattlesnakes which the writer has examined after the poison had been removed. The complete absence of poison in the glands naturally gave rise to some speculation and discussion. The snake, judging from the normal condition of its body organs and the amount of fat it had stored up, must have been in a healthy condition. It was killed almost instantly and had no chance to get rid of the poison by biting any object. Even though it had bitten some object, it is hardly possible that it could have ejected all the poisons from the glands.

About the only reasonable idea that suggested itself was that during the winter season, at least in cold climates, where snakes hibernate, the rattlesnake and perhaps other poisonous snakes do not have venom in the poison-glands. The idea of an organ being developed for some special use and then being dispensed with is in harmony with many things that occur in nature. I had hoped to get some live specimens of rattlesnakes and fix a place for them to go into winter quarters and at the proper time dig them up and make further investigations before presenting a paper upon this subject.

However, rattlesnakes are not very common, except perhaps in a few unfrequented localities, and persons who are willing to catch live rattlesnakes for the moderate sum of two dollars each; and keep them until a naturalist can get hold of them, are also not very common.